

After digestion is complete the blood was sucked up the column containing the glass beads and the DNA became immobilised allowing the contaminating proteins to pass through to waste.

In the Claims:

Please amend claims 25, 26, 33 and 34, as follows:

25. (Amended) A solid phase product for use in a method in which the solid phase reversibly binds nucleic acid present in a sample, the product comprising a plurality of positively ionizable groups, wherein the ionizable groups are immobilized on a solid support and are effective at a first pH at which the ionizable groups are positively charged to bind nucleic acid present in a sample and are effective to release the nucleic acid at a second, higher, pH at which the charge on the ionizable groups is negative, neutral or less positive, the ionizable groups being provided by a chemical species selected from the group consisting of biological buffers, polyhydroxylated amines, histidine and polyhistidine.

26. (Amended) A product according to claim 25, wherein the plurality of positively charged groups are provided by a biological buffer which is selected from the group consisting of:

N-2-acetamido-2-aminoethanesulfonic acid (ACES);

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N-2-acetamido-2-iminodiacetic acid (ADA) ;
amino methyl propanediol (AMP) ;
3-1,1-dimethyl-2-hydroxyethylamino-2-hydroxy propanesulfonic acid (AMPSO) ;
N,N-bis2-hydroxyethyl-2-aminoethanesulfonic acid (BES) ;
N,N-bis-2-hydroxyethylglycine (BICINE) ;
bis-2-hydroxyethyliminotrihydroxymethylmethane (Bis-Tris) ;
1,3-bistrishydroxymethylmethylethylaminopropane (Bis-Tris Propane) ;
4-cyclohexylamino-1-butane sulfonic acid (CABS) ;
3-cyclohexylamino-1-propane sulfonic acid (CAPS) ;
3-cyclohexylamino-2-hydroxy-1-propane sulfonic acid (CAPSO) ;
2-N-cyclohexylaminoethanesulfonic acid (CHES) ;
3-N,N-bis-2-hydroxyethylamino-2-hydroxypropanesulfonic acid (DIPSO) ;
-2-hydroxyethylpiperazine-N-3-propanesulfonic acid (EPPS) ;
-2-hydroxyethylpiperazine-N-4-butanesulfonic acid (HEPBS) ;
-2-hydroxyethylpiperazine-N-2-ethanesulfonic acid (HEPES) ;
-2-hydroxyethylpiperazine-N-2-propanesulfonic acid (HEPPSO) ;
2-N-morpholinoethanesulfonic acid (MES) ;
4-N-morpholinobutanesulfonic acid (MOBS) ;
3-N-morpholinopropanesulfonic acid (MOPS) ;
3-N-morpholino-2-hydroxypropanesulfonic acid (MOPSO) ;
piperazine-N-N-bis-2-ethanesulfonic acid (PIPES) ;
piperazine-N-N-bis-2-hydroxypropanesulfonic acid (POPSO) ;
N-trishydroxymethyl-methyl-4-aminobutanesulfonic acid (TABS) ;

N-trishydroxymethyl-methyl-3-aminopropanesulfonic acid
(TAPS) ;

3-N-trishydroxymethyl-methylamino-2-hydroxypropanesulfonic acid (TAPSO) ;

N-trishydroxymethyl-methyl-2-aminoethanesulfonic acid (TES) ;

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N-trishydroxymethylmethyglycine (TRICINE) ;
trishydroxymethylaminomethane (Tris) ;
polyhydroxylated imidazoles; and
triethanolamine dimers and polymers.

33. (Amended) A container according to claim 32 which is a polymerase chain reaction or storage tube or well, or a pipette tip.

34. (Amended) A water soluble product for use in a method of extracting nucleic acid from a sample, the product comprising a plurality of positively ionizable groups, the ionizable groups being provided by a biological buffers; wherein the plurality of ionizable groups are (i) separately attached to a polymer (ii) polymerised, optionally by means of cross-linking reagents or (iii) separately attached to a polymer and polymerized, optimally by means of cross-linking reagents; and wherein the biological buffer is selected from the group consisting of:

N-2-acetamido-2-aminoethanesulfonic acid (ACES) ;

N-2-acetamido-2-iminodiacetic acid (ADA) ;

amino methyl propanediol (AMP) ;

3-1,1-dimethyl-2-hydroxyethylamino-2-hydroxy propanesulfonic acid (AMPSO) ;

N,N-bis2-hydroxyethyl-2-aminoethanesulfonic acid (BES) ;

N,N-bis-2-hydroxyethylglycine (BICINE) ;

bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris) ;

1,3-bistrishydroxymethylmethyldiaminopropane (Bis-Tris Propane) ;

4-cyclohexylamino-1-butane sulfonic acid (CABS) ;

3-cyclohexylamino-1-propane sulfonic acid (CAPS) ;

3-cyclohexylamino-2-hydroxy-1-propane sulfonic acid (CAPSO) ;

2-N-cyclohexylaminoethanesulfonic acid (CHES) ;

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3-N,N-bis-2-hydroxyethylamino-2-hydroxypropanesulfonic acid (DIPSO) ;

-2-hydroxyethylpiperazine-N-3-propanesulfonic acid (EPPS) ;

-2-hydroxyethylpiperazine-N-4-butanesulfonic acid (HEPBS) ;

-2-hydroxyethylpiperazine-N-2-ethanesulfonic acid (HEPES) ;

-2-hydroxyethylpiperazine-N-2-propanesulfonic acid (HEPPSO) ;

2-N-morpholinoethanesulfonic acid (MES) ;

4-N-morpholinobutanesulfonic acid (MOBS) ;

3-N-morpholinopropanesulfonic acid (MOPS) ;

3-N-morpholino-2-hydroxypropanesulfonic acid (MOPSO) ;

piperazine-N-N-bis-2-ethanesulfonic acid (PIPES) ;

piperazine-N-N-bis-2-hydroxypropanesulfonic acid (POPSO) ;

N-trishydroxymethyl-methyl-4-aminobutanesulfonic acid (TABS) ;

N-trishydroxymethyl-methyl-3-aminopropanesulfonic acid (TAPS) ;

3-N-trishydroxymethyl-methylamino-2-hydroxypropanesulfonic acid (TAPSO);

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N-trishydroxymethyl-methyl-2-aminoethanesulfonic acid (TES);

N-trishydroxymethylmethyglycine (TRICINE);

trishydroxymethylaminomethane (Tris);

polyhydroxylated imidazoles; and

triethanolamine dimers and polymers.

Please add new claims 42-68, as follows:

42. (New) A solid phase product for use in which the solid phase reversibly binds nucleic acid present in a sample, the product comprising a plurality of positively ionisable groups, wherein the ionisable groups are immobilised on a solid support and are capable at a first pH at which the ionisable groups are positively charged of binding nucleic acid present in a sample and are capable of releasing the nucleic acid at a second, higher, pH at which the charge on the ionisable groups is negative, neutral or less positive, the ionisable groups being provided by a biological buffer selected from the group consisting of:

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N-2-acetamido-2-aminoethanesulfonic acid (ACES);

N-2-acetamido-2-iminodiacetic acid (ADA);

amino methyl propanediol (AMP);

3-1,1-dimethyl-2-hydroxyethylamino-2-hydroxy propanesulfonic acid (AMPSO);

N,N-bis2-hydroxyethyl-2-aminoethanesulfonic acid (BES);

N,N-bis-2-hydroxyethylglycine (BICINE) ;
bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris) ;
1,3-bistrishydroxymethylmethyaminopropane (Bis-Tris Propane) ;
4-cyclohexylamino-1-butane sulfonic acid (CABS) ;
3-cyclohexylamino-1-propane sulfonic acid (CAPS) ;
3-cyclohexylamino-2-hydroxy-1-propane sulfonic acid (CAPSO) ;
2-N-cyclohexylaminoethanesulfonic acid (CHES) ;
3-N,N-bis-2-hydroxyethylamino-2-hydroxypropanesulfonic acid (DIPSO) ;
N-2-hydroxyethylpiperazine-N-3-propanesulfonic acid (EPPS) ;
N-2-hydroxyethylpiperazine-N-4-butanesulfonic acid (HEPBS) ;
N-2-hydroxyethylpiperazine-N-2-ethanesulfonic acid (HEPES) ;
N-2-hydroxyethylpiperazine-N-2-propanesulfonic acid (HEPPSO) ;
2-N-morpholinoethanesulfonic acid (MES) ;
4-N-morpholinobutanesulfonic acid (MOBS) ;
3-N-morpholinopropanesulfonic acid (MOPS) ;
3-N-morpholino-2-hydroxypropanesulfonic acid (MOPSO) ;
piperazine-N-N-bis-2-ethanesulfonic acid (PIPES) ;
piperazine-N-N-bis-2-hydroxypropanesulfonic acid (POPSO) ;
N-trishydroxymethyl-methyl-4-aminobutanesulfonic acid (TABS) ;
N-trishydroxymethyl-methyl-3-aminopropanesulfonic acid (TAPS) ;
3-N-trishydroxymethyl-methylamino-2-hydroxypropanesulfonic acid (TAPSO) ;

N-trishydroxymethyl-methyl-2-aminoethanesulfonic acid (TES);
N-trishydroxymethylmethyglycine (TRICINE);
trishydroxymethylaminomethane (Tris);
polyhydroxylated imidazoles; and
triethanolamine dimers and polymers.

43. (New) A product according to claim 42, wherein the biological buffer is bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris).

44. (New) A product according to claim 42, wherein the plurality of ionisable groups are separately immobilised on a solid support by covalent or ionic bonding or by adsorption.

45. (New) A product according to claim 42, wherein the plurality of ionisable groups are separately attached to a polymer, said polymer being immobilised on a solid support by covalent or ionic bonding or by adsorption.

46. (New) A product according to claim 42, wherein the ionisable groups are polymerised, optionally by means of cross-linking reagents.

47. (New) product according to claim 46, wherein the polymer is immobilised on a solid support by covalent or ionic bonding or by adsorption.

48. (New) A product according to claim 42, wherein the solid phase is selected from the group consisting of beads, particles, tubes, wells, probes, dipsticks, pipette tips, slides, fibers, membranes, papers, glass and plastics.

49. (New) A product according to claim 48, wherein the solid phase is magnetic beads.

50. (New) A product according to claim 48, wherein the solid phase is paramagnetic beads.

51. (New) A solid phase product for use in which the solid phase reversibly binds nucleic acid present in a sample, the product comprising a plurality of positively ionisable groups, wherein the ionisable groups are immobilised on a solid support and are capable at a first pH at which the ionisable groups are positively charged of binding nucleic acid present in a sample and are capable of releasing the nucleic acid at a second, higher, pH at which the charge on the ionisable groups is negative, neutral or less positive, the ionisable groups being provided by bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris).

52. (New) A product according to claim 51, wherein the bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris) groups are separately immobilised on a solid support by covalent or ionic bonding or by adsorption.

53. (New) A product according to claim 51, wherein the bis-2-hydroxyethyliminotrihydroxymethylmethane (Bis-Tris) groups are separately attached to a polymer, said polymer being immobilised on a solid support by covalent or ionic bonding or by adsorption.

54. (New) A product according to claim 51, wherein the bis-2-hydroxyethyliminotrihydroxymethylmethane (Bis-Tris) is polymerised, optionally by means of cross-linking reagents.

55. (New) A product according to claim 54, wherein the polymer is immobilised on a solid support by covalent or ionic bonding or by adsorption.

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56. (New) A product according to claim 51, wherein the solid phase is selected from the group consisting of beads, particles, tubes, wells, probes, dipsticks, pipette tips, slides, fibers, membranes, papers, glass and plastics.

57. (New) A product according to claim 56, wherein the solid phase is magnetic beads.

58. (New) A product according to claim 56, wherein the solid phase is paramagnetic beads.

59. (New) A solid phase product for use in which the solid phase reversibly binds nucleic acid present in a sample.

the product comprising a plurality of positively ionisable groups, wherein the ionisable groups are immobilised on a solid support and are capable at a first pH at which the ionisable groups are positively charged of binding nucleic acid present in a sample and are capable of releasing the nucleic acid at a second, higher, pH at which the charge on the ionisable groups is negative, neutral or less positive, the ionisable groups being provided by bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris) and the solid phase is comprises beads.

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60. (New) A product according to claim 59, wherein the bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris) groups are separately immobilised on the beads by covalent or ionic bonding or by adsorption.
61. (New) A product according to claim 59, wherein the bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris) groups are separately attached to a polymer, said polymer being immobilised on the bead by covalent or ionic bonding or by adsorption.
62. (New) A product according to claim 59, wherein the bis-2-hydroxyethyliminotrishydroxymethylmethane (Bis-Tris) is polymerised, optionally by means of cross-linking reagents.

63. (New) A product according to claim 59, wherein the polymer is immobilised on the beads by covalent or ionic bonding or by adsorption.

64. (New) A product according to claim 59, wherein the solid phase is magnetic beads.

65. (New) A product according to claim 59, wherein the solid phase is paramagnetic beads.

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and* 66. (New) A product according to claim 25, wherein the solid phase is selected from the group consisting of beads, particles, tubes, wells, probes, dipsticks, pipette tips, slides, fibers, membranes, papers, glass and plastics.

67. (New) A product according to claim 66, wherein the solid phase is magnetic beads.

68. (New) A product according to claim 66, wherein the solid phase is paramagnetic beads.

Cancel claims 35-37.

REMARKS

The Official Action dated June 18, 2002 and the references cited therein have been carefully considered. In view